Ontario Energy Board

EB-2012-0410

Board Policy

A New Distribution Rate Design for Residential Electricity Customers

April 2, 2015

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Introduction and Summary

A New Distribution Rate Design

This policy document explains a change in the structure of Ontario's residential electricity distribution rates. The Ontario Energy Board (the OEB) has decided to make this change after an extensive consultation with distributors, customers, customer representatives, conservation advocates and other stakeholders. We have concluded that this change is an important step in the ongoing evolution of the electricity sector in Ontario that will benefit customers and support distributors. This document explains the change and the reasons for it, and how it will be implemented.

This policy is focused on just one aspect of electricity charges: distribution rates. Distribution rates are designed to recover the costs for the poles, wires, meters, transformer stations, trucks and computer systems that bring electricity from the high voltage transmission system to the individual homes and businesses of Ontario. These charges represent about 20% to 25% of a residential customer's total electricity bill. The other parts of the electricity bill relate to charges for electricity generation, transmission and system operations.[1] This policy does not affect those parts of the bill.

Under the new policy, electricity distributors will structure residential rates so that all the costs for distribution service are collected through a fixed monthly charge. This change will help achieve three main objectives:

1. It will enable residential customers to leverage new technologies, manage costs through conservation, and better understand the value of distribution services.
2. It is a fairer way to recover the costs of providing distribution service.
3. It will provide greater revenue stability for distributors, which will position them for technological change in the sector, remove any disincentive to promote conservation, and help with their investment planning.

[1] The costs of generation are recovered through the Time-of-Use charges which appear on your bill. Your distributor collects the money for these charges and this money is sent to the electricity generators. The costs of transmission are collected through rates that are set uniformly across the province. Again, the distributor collects the money which is then sent to the transmitters. Distribution companies earn no profit on generation or transmission services, only on distribution service.

Background

Under the OEB's legislation we must consider the interests of customers in everything we do. We believe that current and future customers' interests are best protected when distributors provide efficient, safe, and reliable service over the long term. We call this value for money.

We also have a responsibility to promote conservation and renewable generation and to facilitate the technological development of the system (known as smart grid). These factors are part of the public policy framework which guides our work.

In everything we do, we strive to bring together the interests of customers and distributors within the overall public policy framework to ensure value for money for customers. This new policy is an example of that alignment of customer and distributor interests within the public policy framework.

Rate Design: After deciding how much revenue a distributor needs, the OEB sets the actual rates that customers pay. This process is known as **rate design**, and it is guided by a set of well-established principles, including:

- **Fairness**: customers should pay for the costs they cause
- **Stability**: customers need to be able to plan their budgets, any changes should be gradual
- **Simplicity**: complex rate structures add cost and make it harder for customers to understand
- **Effectiveness**: distributors recover their costs

The New Policy

Electricity distributors will structure residential rates so that all the costs for residential distribution service are collected through a fixed monthly charge.

The current distribution rate design is a combination of a fixed monthly rate and a separate usage rate. The total charge for distribution service therefore varies with the amount of electricity a customer uses. The split between fixed and variable charges also varies by distributor. The OEB's general policy for rate design is to increase the amount of revenue collected through the fixed rate, and reduce the amount of revenue collected through the usage rate. We will implement this policy first with residential electricity customers. Next, we intend to review the rate design for low-volume general service customers (generally small businesses) and coordinate that rate design with changes in the larger general service categories, following the same policy reasons. We also

intend to implement the general policy direction for natural gas residential customers. We will provide more information about those processes in due course.

The new residential rate design will be a fixed monthly charge only. All distributors will make this change. The specific charge will vary from distributor to distributor, depending upon the costs of the specific distributor.

Distributors will collect the same total revenue (from residential customers) under the new policy as they did before. Most individual customers will see only a small change in their total bill. However, residential customers that use a lot of electricity and those that use very little electricity will see larger changes. Customers that use a lot of electricity (for example, those that heat with electricity) will see their distribution charges go down; customers that use little electricity will see their distribution charges go up. We discuss the reasons for this later in this report.

We will implement the change gradually to help customers whose bills will be increasing. Over the next four years, the fixed monthly rate will increase gradually, and the usage rate will decrease gradually. By 2019 there will only be a fixed monthly rate for distribution services and no usage rate.

Not all of the implementation details have been worked out. For example, the OEB will consider whether there should be a separate distribution rate for apartments and condominiums which are metered individually by distributors. The OEB is setting up a working group to help finalize these details. More information about these issues is contained at the end of this report.

The Consultation Process

The OEB has been consulting on this issue for many years. The work has gone through a number of phases, each of which has provided more data and analysis to inform our policy direction. Along with our stakeholder consultations, we have commissioned a number of reports by experts, we have gathered more information from distributors and customers, and we have conducted more detailed analysis ourselves. We have also had the opportunity to look at what regulators in other places have done, including jurisdictions that are examining the impact of broader technological change and the link to rate design as well as jurisdictions that have moved forward with fixed monthly distribution rates.[2]

[2] Georgia, Missouri, North Dakota, Oklahoma are each moving to a fixed rate design for natural gas distribution. Ohio is implementing a fixed rate design for residential electricity customers and Illinois has approved an increase in fixed rate for ComEd Illinois with further increases expected.

The OEB released a draft version of this policy in April 2014. After that we held meetings with electricity distributors, customer representatives and conservation advocates. We also received written comments from 26 groups or individuals. This report explains how we reached our conclusions based on the analysis we have done and the input we have received.

As a result of our consultation process, we know that the key concerns with this policy are the potential impact on low income customers and the potential impact on conservation. We have considered these two issues carefully. We have concluded that the change will help to fulfill our responsibility to promote conservation and renewable generation. We have also concluded that the change will benefit many of the low income customers who are most vulnerable in terms of electricity, those who use electricity for heating. We will also take steps to protect other low income customers that will be faced with bill increases as a result of this policy. There is more information about these important issues later in this report.

The rest of this report explains each of the objectives set out above. We also explain how the new policy will be implemented. All of the documents related to this consultation are posted on the OEB's website.

Helping Customers to Leverage New Technologies, Manage Their Bills through Conservation, and Understand the Value of Distribution Service

Technological change is expected to have a significant impact on the electricity sector in the coming years. These changes are happening in the U.S. and in other countries as well. As the regulator for the sector, the OEB should remove barriers to that evolution and related innovation, and it is also our responsibility to ensure that the changes benefit customers. We must ensure that we keep pace with technological change and, where possible, to be ahead of the change. The OEB is committed to ensuring that technological change results in benefits for customers.

Technological advancement and successful innovation will require well informed customers who are equipped to engage with the market. The OEB has an important role in this area. We adopted a customer-centric approach a few years ago to enhance understanding about energy matters and the factors that impact electricity bills; this is also known as energy literacy. Our goal is to equip customers with the information and the tools they need to make informed choices about how they use energy. We want to:

- Enable customers to leverage new technologies, including self-generation using renewable resources
- Help customers manage their bills through conservation
- Help customers better understand the value of electricity service

Enabling Customers to Leverage New Technologies

Ongoing technological change is making it more economical for residential customers to generate their own electricity. If a large number of customers are self-generating, this could cause a significant decrease in distribution volumes, with little decrease in actual system costs. Grid parity is the point when the costs of self-generation are the same as retail electricity rates. That point is in the foreseeable future. The costs of generation technology such as solar power continue to decline, as do the costs of advanced technology such as storage, which will help low volume customers manage their usage within the boundaries of what they are able to produce.

One of the possibilities when a residential customer installs self-generation technology is a process called net metering. In other words, customers do not pay for the electricity they generate themselves. A special meter measures how much the house puts into the grid and takes from the grid. A customer who generates enough electricity to cover all self needs may pay only the monthly service charge. However, this monthly charge does not include all of the costs to the distributor to provide ongoing reliable service and to take the customer's extra electricity when produced. As a result, the OEB has had to place limits on the amount of net metering a distributor may provide. This, in turn, limits the number of customers who can adopt these new renewable generation technologies.

Net Metering: When residential customers install their own generation (for example solar panels) they get a special meter which measures how much electricity they put into the system and how much they take from the system. The special meter ensures that they only pay for the "net" amount that they take from the system. They do not pay for the electricity they generate themselves, even if they do not use all of it at the time it is generated.

Part of the OEB's mandate is to promote renewable generation. In particular, the government's goal as stated in the Long-Term Energy Plan[3] is to have more small renewable generation connected using net metering. The new rate design will ensure that distribution system costs are fully recovered from all residential customers, including net metered customers who want the assurance of a reliable back-up supply from the distributor. As a result, the OEB will be able to remove the current restrictions on net metering and customer-owned renewable generation. The OEB also intends to remove the standby rate when the new rate policy is implemented for commercial customers. These changes will help promote greater adoption of renewable generation and net metering.

As explained further in the next chapter, a distributor's costs do not decrease much as the average usage declines. We do not want distributors to be in a position where they will resist technologies which help customers conserve electricity or which lead to more advanced, reliable and efficient electricity systems. The new rate design policy will help ensure that distributors can facilitate technology changes and enable innovation which will bring benefits to customers and to the electricity system as a whole.

[3] ***Achieving Balance – Ontario's Long-Term Energy Plan***, Ministry of Energy, December 2013, p.41

Helping Customers Manage Their Bills through Conservation

Conservation is a cornerstone of the province's energy policy. This focus is clearly stated in the Long Term Energy Plan: "As we plan for Ontario's electricity needs for the next 20 years, conservation will be the first resource to be considered."[4] In 2013, the government committed to expanding and enhancing conservation efforts.[5] The current framework for conservation is being delivered by Ontario's distributors with funding and coordination by the Independent Electricity System Operator. The OEB has an important role in promoting this public policy initiative, and there is an explicit objective in our legislation to do so.

By requiring the new rate design, the OEB is promoting conservation in support of government policy by ensuring that customers receive better price signals and distributors have no disincentive to pursue conservation.

Many stakeholders have expressed concern that removing the usage charge will reduce the success of conservation efforts and will have an adverse impact on the achievement of conservation targets. These stakeholders believe that customers will be less likely to undertake conservation measures because it will take longer for them to recoup the cost through bill savings (also known as the payback period). As a result, there would either be less conservation undertaken, or more money would need to be spent on giving customers financial incentives for conservation measures.

The OEB acknowledges that removing the usage part of the distribution charge technically lowers the incentive to conserve. However, our analysis supports the conclusion that this impact is more theoretical than real. Residential conservation programs are not based on sensitive payback calculations. We also looked at whether there is a mathematical relationship between the level of distribution costs recovered through the fixed charge and the achievement of conservation targets for 2011-2013. No evidence of a relationship was found.[6] In other words, a lower usage charge did not seem to affect a distributor's ability to achieve its conservation target. We conclude that the variable distribution rate does not affect whether residential conservation programs are justified, and therefore moving to the fixed charge will not impact those decisions.

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[4] ***Achieving Balance – Ontario's Long-Term Energy Plan***, Ministry of Energy, December 2013, p, 20.
[5] ***Conservation First – A Renewed Vision for Energy Conservation in Ontario***, Ministry of Energy, 2013.
[6] Correlation and simple linear regression analyses was performed to see if there is a relationship between the distributor's conservation target (Y) in percentage of target achieved, and the percentage of distributor revenue that is fixed (X). Neither analysis found a strong or statistically significant relationship between the two variables. However, in the case of the linear regression analysis, the model is most likely under fitted, as only 1.2% of the variation in conservation is being explained by the proportion of fixed revenue. In other words, there are other variables that could potentially better explain the variation in conservation achieved.

More importantly, the supply charges, including the time-of-use structure, provide the strongest and most accurate price signals to support customer conservation decisions. First, the supply charge represents about 50% of a customer's bill, whereas the variable distribution charge represents a smaller portion, only about 5% to 15%. Therefore, conservation (either reducing total use or shifting use to the off-peak period) will still result in direct and significant bill reductions, even when the distribution charge is fixed. Second, these supply charges are the subject of significant conservation efforts. The OEB is currently reviewing time-of-use rates. We have had external consultants investigate how well the rates have worked and whether there are ways to help customers better understand the price structure. The results show that customers are aware of the time-of-use pricing program, but they have trouble understanding how it works. The consultants have identified some changes to the program and the electricity bill that could increase customer understanding and potentially increase overall customer conservation.

Equally important, the conservation incentive created by variable distribution charges, albeit small, is misleading. Every dollar in distribution charges that a customer saves through conservation is subsequently recovered from customers. In other words, although the variable usage charge provides a price signal to encourage conservation, this signal has little relationship to actual distribution costs. Under the current rate structure, distributor revenues decrease when conservation measures are successful in reducing load. But actual distribution costs change very little when the usage declines. Distributors, therefore, have an inherent disincentive to promote conservation. In order to overcome this disincentive, distributors are allowed to track and recover these "lost" revenues, through a lost revenue adjustment to the rates charged to customers. This removes the disincentive, but the system for tracking and recovering these lost revenues is complex. It also gives rise to customer complaints that there is little reason to conserve if the distribution rates are going to be increased as a direct result.[7]

The new distribution rate design will remove these distortions on customer choices and allow distributors to focus more effectively on meeting their new conservation targets. Other jurisdictions have reached similar conclusions when they have looked at how moving to a fixed monthly distribution charge will impact conservation.[8]

[7] This mechanism itself changes the payback calculation because distribution charges are raised after the fact to collect these lost revenues. For example, the customer makes a payback calculation based on current rates. But the distributor is allowed to recover the revenue lost due to promoting approved conservation programs. As a result, distribution rates will rise to recover that lost revenue. This in turn will change the payback calculation after the decision has already been made.

[8] Illinois and Ohio did not accept that there would be an adverse impact on conservation programs. Stakeholders in those jurisdictions made many of the same arguments that have been put forward by our stakeholders. Illinois concluded that variable commodity costs were enough to induce conservation. Ohio concluded that any change in the payback period was appropriate since it was due to large volume customers no longer subsidizing the fixed

Helping Customers Understand the Value of Energy Service

Electricity pricing is a key piece of information for customers. The OEB believes that if there is clarity in pricing, this will lead to better understanding of value. The current rate design for distribution service is not reflective of the costs to distribute electricity, because costs that are mostly fixed are being recovered through charges which vary with usage. Therefore we are not achieving clarity in the pricing for this aspect of electricity service.

A fixed monthly charge is a more accurate way to recover the costs of distribution. (We discuss this in more detail in the next chapter.) A fixed monthly charge has the added benefit of being easy to understand. Many stakeholders agreed with this point. Our own focus groups understood that distribution charges pay for fixed assets that cannot be removed when load declines. A fixed distribution charge will support greater understanding of the fixed nature of these costs and greater understanding of the value of the service, leading to higher energy literacy.

Clarity in pricing is important because customers make choices in response to prices. We want the rates to reflect the costs of providing the service. If the rates are not based on the costs, then the price signal is incorrect and the resulting customer choices will not be the most efficient, which may harm the customer as well as the system overall.

The OEB knows that the electricity bill is complex. Focus groups and surveys have told us that customers have little understanding of the structure of the electricity industry that underlies the current form of the bill or how electricity is measured.[9] Our initial work suggests that some customers would find a bill that distinguishes between fixed and variable charges would be more helpful.[10] The new distribution rate design simplifies one aspect of electricity rates. It will also allow for clearer comparisons between distributors. With all distributors charging in the same way, it will be transparent to customers which distributors are achieving the greatest success at running their systems efficiently. By holding the distribution charge steady, customers can focus on the supply part of the bill, which will vary with usage. The result will be a bill that better reflects actual costs and provides a clearer price signal to encourage conservation.

The OEB understands that customer education is an important part of this policy change. Customers must understand the change and what it means for them. We will work with stakeholders to deliver effective customer education which explains the change and supports the focus on conservation to reduce bills.

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costs of small volume customers. Ohio also concluded that high commodity costs, which are the major portion of customers' bills, would motivate customers to conserve, whether the distribution charge is fixed or volumetric.

[9] The Gandalf Group, "Ontario Energy Board: Distribution Charge Focus Groups", October 9, 2013, p5.

[10] O. Reg. 275/04: Information on Invoices to Low-volume Consumers of Electricity

A Fairer Way to Recover Distribution Costs

Distribution rates are currently structured as a combination of a fixed monthly charge and a separate charge for each unit of electricity that a customer uses (a usage charge). The result is that the more electricity a customer uses, the higher the total charge for distribution. This may seem fair, but it is not. The actual cost to provide distribution service to a residential customer does not change much if the customer's usage goes up or down. For example, no matter how much electricity a residential customer uses, that customer still needs a meter, a connection to the nearest distribution pole, the poles and wires that bring electricity from the bulk system, and a place in the customer service computer system.

The current rate design also creates inconsistency across distribution systems, because the relative levels of the fixed and variable charges vary across distributors. Within the sample of distributors we studied in detail, the variable charge is used to collect between 28% and 62% of the total revenue needed. The result is that customers on some distribution systems will see their total distribution charge vary quite a bit depending upon how much they use, while the customers on other distribution systems will see much less variability. The new rate design policy will eliminate this inconsistency.

The new rate design will be a fairer, simpler and more consistent way to charge for the costs of providing distribution service. This chapter explains how most distribution costs are fixed. We also discuss the impact of the rate design change on customers, particularly low income customers.

Distribution Costs

A distributor plans and builds its system to be large enough to serve all of its customers when overall demand is at its highest (for example, a very hot day), even if customers only reach that peak occasionally. These are the costs for transformer stations, poles, meters, trucks, wires, computer systems, etc. We call these distribution costs "fixed costs" because they do not increase or decrease with short-term changes in a customer's usage. The OEB has commissioned analysis related to this point as part of the work done on our new electricity rate regulation framework. That work shows that a distributor's long-term costs are driven largely by two factors: the number of customers and the peak demand on the entire distribution system. Further analysis confirms that the main cost driver is the number of customers, followed by the peak demand, and that

the total amount of electricity (as opposed to the peak) has less of an impact on long-term costs for distributors.[11]

Even though almost all distribution costs are fixed, these costs are recovered through a combination of a fixed charge and a charge that varies with usage. As indicated above, we looked at a sample of Ontario distributors and found that fixed charges were collecting between 38% and 72% of the costs of residential distribution service, and the usage charges were collecting between 28% and 62% of the costs.

The result of the current rate design is that customers who use a lot of electricity pay more than their fair share of distribution costs, in other words these customers subsidize the low volume customers. It might seem that customers that use more (or who live in larger houses) should pay more, but that would only be fair if by using more those customers caused more costs on the system. In the case of electricity generation, using more does cause more costs, and customers who use more will continue to pay more for generation costs. However, if a residential customer uses more electricity it does not cause more *distribution* costs in the short term. It is a bit like basic landline telephone service, or basic cable service, where the price is the same no matter how large your house, or how many phones or televisions you have.

Although high volume residential customers are paying more than their fair share of *distribution* costs, after the rate change they will still have higher total bills than customers with smaller houses or customers who conserve more. The high volume customers will have higher bills because they will be paying more for generation.

Under the current system, a distributor's revenues also vary with the weather. If the weather is colder or warmer than had been forecast, then the distributor may earn additional unexpected revenue. However, these volume changes will not change the distributor's actual costs by much. The result is that the customers may pay more or less than necessary to cover the costs of distribution service, just because of the weather.

Customer Impacts

The result of the distribution rate design change will be that the distribution portion of all residential customer bills will be stable and predictable. All residential customers of a particular distributor (for example, Toronto Hydro or Hydro Ottawa) will pay the same monthly distribution charge. These charges will not vary with the weather, so distributors

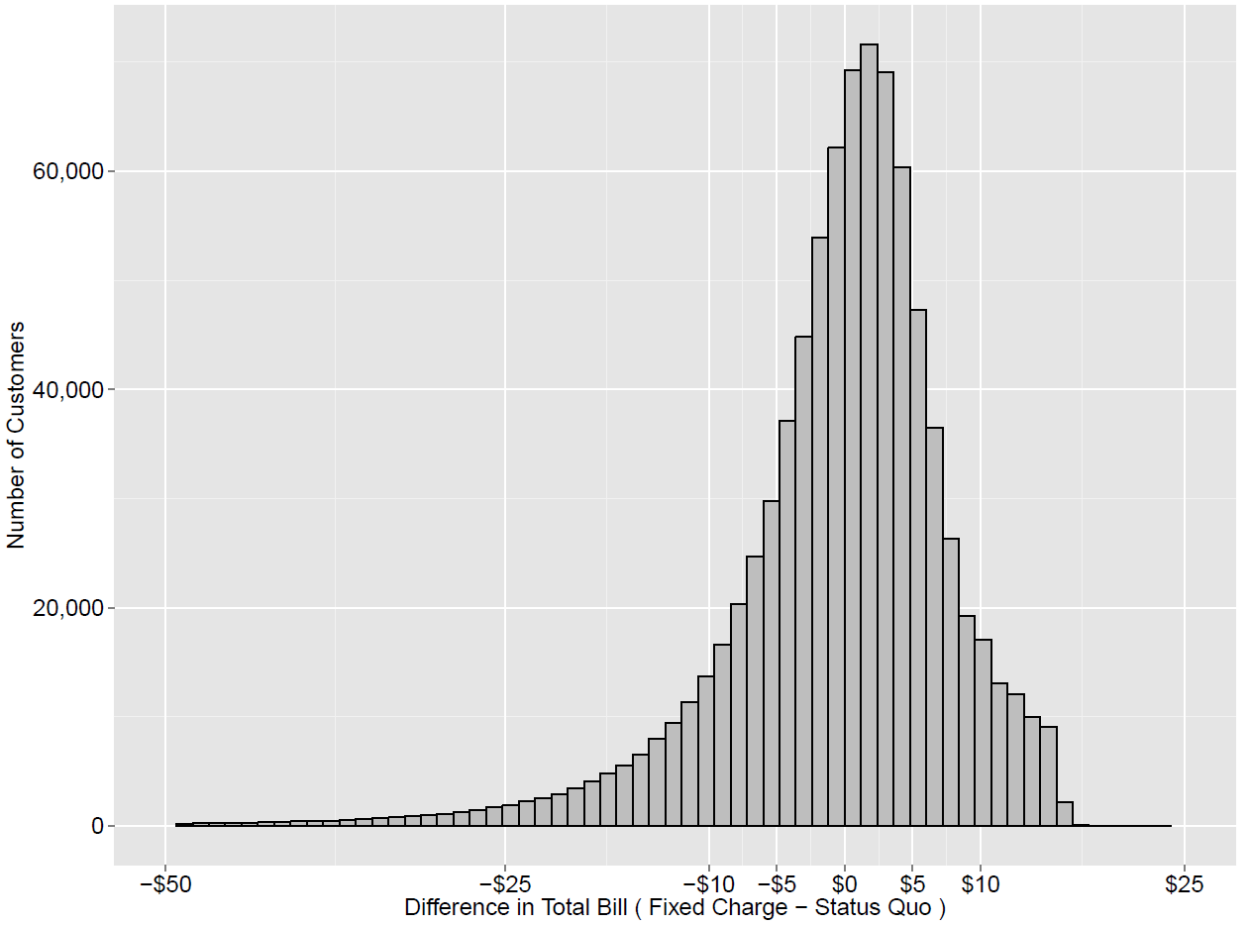
[11] Pacific Economics Group Research, LLC, *Empirical Research in Support of Incentive Ratemaking in Ontario*, May 2013, p. 48 and 54.

will no longer earn extra revenue (or have a revenue shortfall) as a result of weather differences.

The impact on a customer's bill, however, will vary depending upon how much electricity they use: higher volume customers will pay lower distribution charges than they currently pay, and lower volume customers will pay higher distribution charges than they currently pay. We analyzed the bill impact for the residential customers on eleven distribution systems, or about 850,000 customers. Figure 1 below shows that most customers will see little change in their total bill after the new policy is fully implemented:

- About 57% of customers will see no change, or will see a bill increase or decrease of less than $5 per month.
- About 21% will see a bill decrease of more than $5 per month.
- About 22% will see an increase of more than $5 per month.

Figure 1: Bill Impacts for all Residential Customers of 10 Distributors ($ per month)[12]



While most customers will see little or no change, and some customers will see substantial reductions, there will be customers facing bill increases. The OEB understands that bill increases are never welcome. We work to ensure that customers understand the reasons for the increases. It is important that changes are made gradually to mitigate the impact of the increase and to give customers the opportunity to adapt. For this reason, we will implement the new rate design over four years. There is more information about the transition process at the end of this report. Some low volume customers live in multi-unit buildings where the distributor meters each customer individually. We will consider whether these customers should be charged a separate rate. At the end of this report we explain how that issue will be examined.

[12] The OEB analyzed monthly/bi-monthly 2012 consumption data for 846,881 customers from 11 geographically and size diverse distributors. Estimated bills were constructed using each distributor's tariff sheet for 2014 and the class revenue and actual number of customers for 2014.

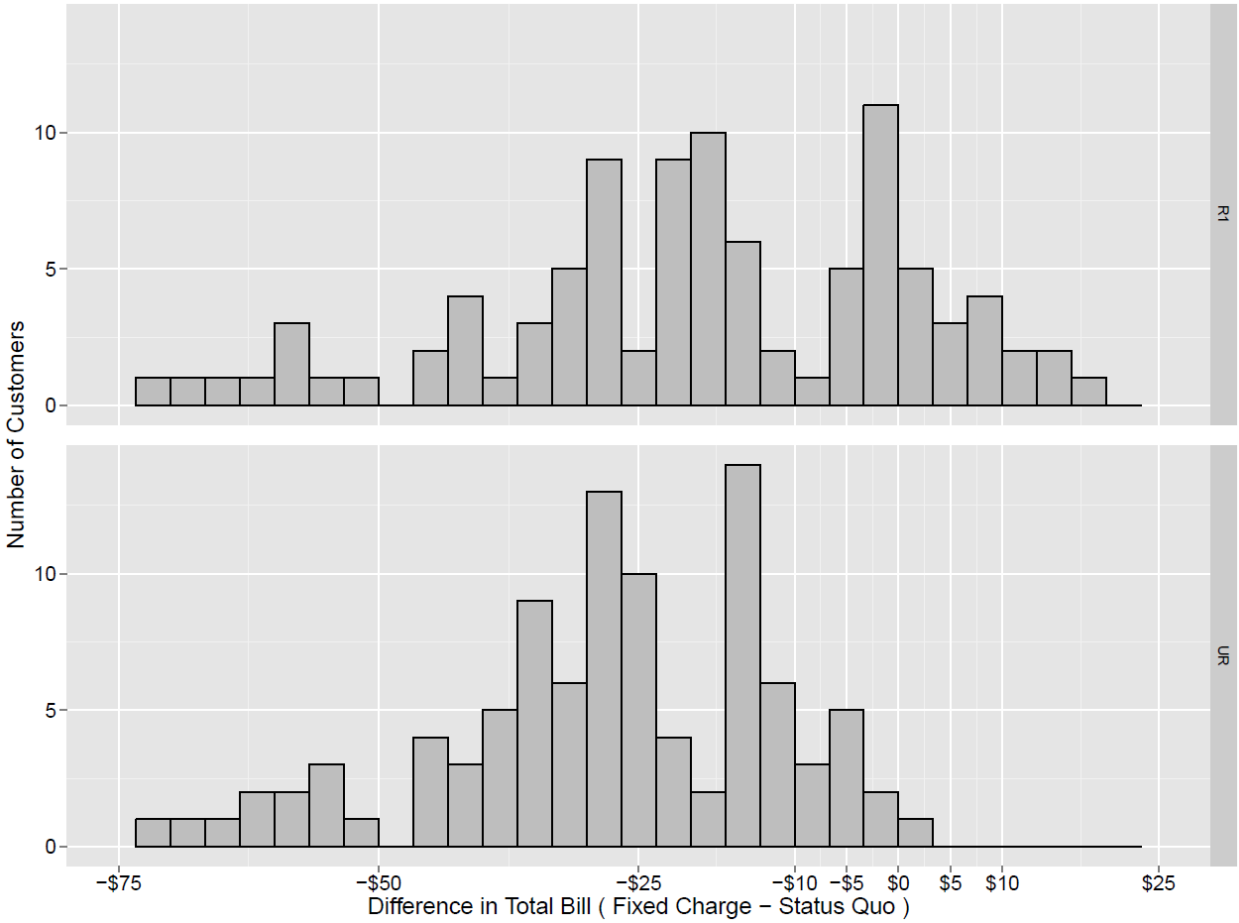
Helping Low Income Customers

The OEB is particularly concerned about the impact of bill increases on low income customers. Some stakeholders have expressed concern that because low volume users will see bill increases this will create a disproportionate burden on low income customers. There are of course low volume residential customers who are low income. However, many low volume users are not low income. Representatives of low income customers have told the OEB that many low income customers use electricity for heating. This means that they are in fact high volume users and are paying more than their share of the costs for the system. The distribution rate design change will benefit these low income customers directly because their bills will decrease. This is particularly important because these customers have high total bills due to their relatively high use.

The OEB conducted further analysis to verify our understanding of these impacts on all customers that heat with electricity. We looked at the impact of the distribution rate design change on 50 electric baseboard customers and 50 electric furnace customers on the Hydro One Networks Inc. system.[13] We calculated the impact in different residential rate classes, because the data did not show the customer class for each customer. This analysis shows that most of these customers will experience a bill reduction, some quite substantial, after the policy is fully implemented. Very few customers will face bill increases, and the increases are smaller than the decreases. The results are set out in Figure 2 below.

[13] This sample would include low income and higher income customers.

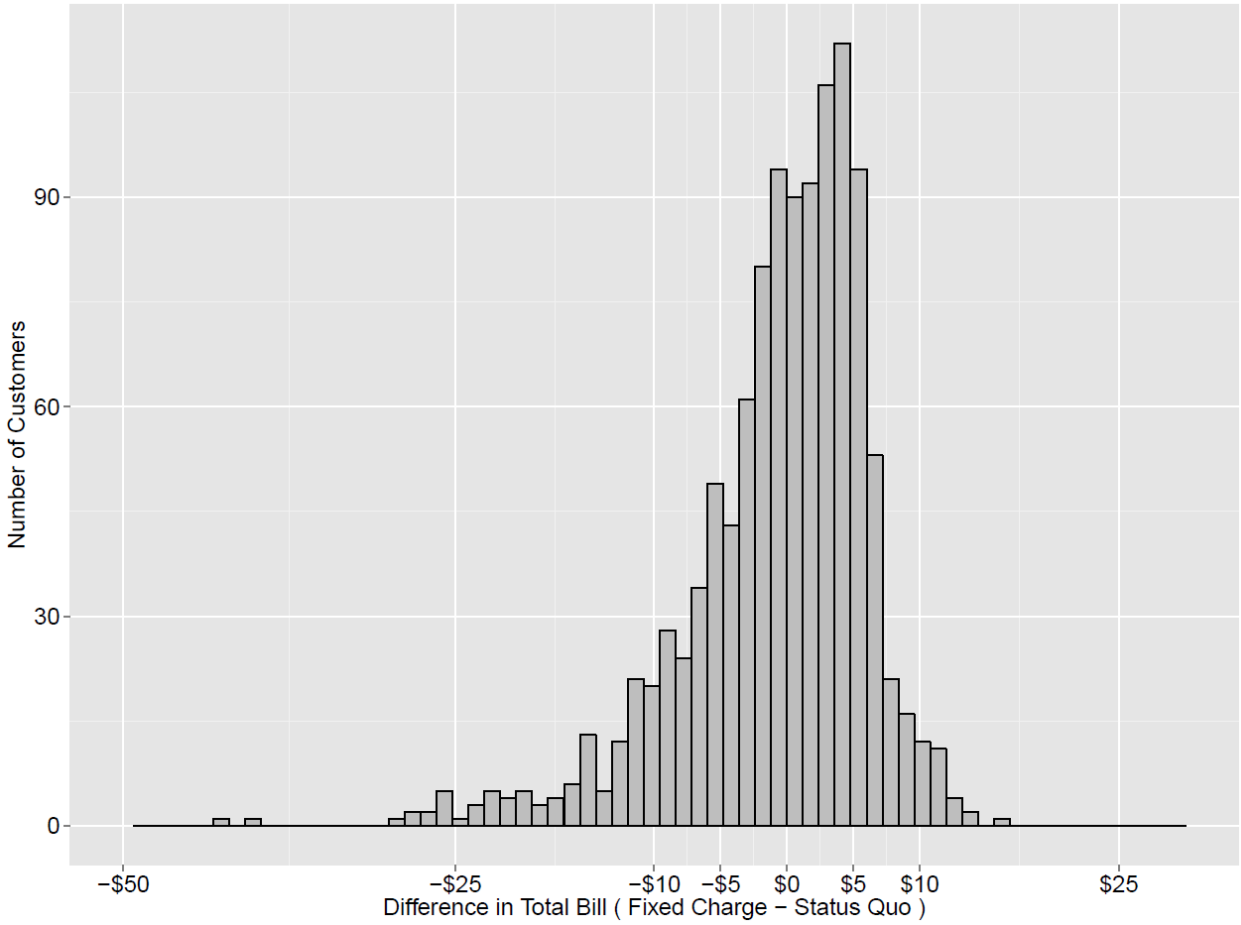
Figure 2: Bill Impacts for Sample Electric Baseboard and Furnace Customers ($ per month)



While many low income customers will benefit from the new rate design, particularly those with electrically heated homes, the OEB remains concerned about the impact on those customers that will face bill increases as a result of this rate design change. We have analyzed the extent of the impact on a sample of 1,141 low income customers.[14] These are customers who have used the emergency financial assistance program, and are therefore among the more vulnerable customers. This analysis (Figure 3 below) shows that the electricity bill will decrease or not change for about 46% of these customers. About 37% will see a bill increase under $5 per month, and about 17% would see a bill increase of more than $5 per month. Low income representatives have explained that an increase greater than $5 per month will create significant difficulties for many low income customers.

[14] We analyzed consumption in 2012 by 774 PowerStream customers and 367 Hydro Ottawa customers who accessed emergency financial assistance under the OEB's LEAP (Low Income Energy Assistance Program) in 2012. Bill calculations were made with each distributor's 2014 tariff.

Figure 3: Bill impacts for Sample LEAP Customers ($ per month)



Our conclusion is that many low income customers will benefit from the policy change through bill reductions. Of those facing a bill increase, most will not see an increase over $5 per month. However, we remain committed to assisting all low income customers who will be facing increases. They will be helped by the gradual implementation of the change. As discussed at the end of this report, the OEB will also consider requests for a longer transition period, if the standard implementation period would lead to significantly higher bill impacts.

In addition to the phased implementation, the OEB has for a number of years had a set of programs in place to assist low income customers. Together, these programs are known as LEAP. They include emergency financial assistance, special customer service rules, and targeted conservation programs. These programs will continue and the OEB

is in the process of implementing a new program called the Ontario Electricity Support Program to provide rate assistance to these customers.

Stabilizing Distribution Revenue to Position the Sector for Technological Change and Improved Conservation Focus and Investment Planning

As we explained earlier in this report, technological change is expected to have a significant impact on the electricity sector in the coming years. As the regulator for the sector, the OEB should remove barriers to that evolution and related innovation, and it is also our responsibility to ensure that the changes benefit customers. We have done a lot of work in this area already. For example, we have reformed rate regulation to place greater emphasis on system planning, performance improvement and customer engagement. We also have higher expectations for distribution system planning and distributor performance. But more work is necessary to ensure that we keep pace with change, and where possible, to be ahead of the change. The OEB is committed to ensuring that technological change results in benefits for customers.

Distributors also have significant conservation targets they must meet as part of the government's Conservation First policy. As discussed earlier in this report, distributors have the key role in delivering a full range of conservation programs which are designed to reduce electricity use by 7 TWh by the end of 2020. The more successful distributors are in achieving these conservation targets, the greater the bill savings for customers.

Currently, a distributor's revenues vary depending on conservation, weather and economic activity. However, these factors have very little influence (in the short-term) on the costs a distributor pays. Under a fixed monthly charge, distributor revenues will be more stable and more predictable. This new rate design will support distributors in their investment planning as they deliver on their new conservation targets and respond to the technological challenges ahead, which in turn will provide significant benefits for customers. The OEB is also concerned with cost performance. The new rate design will facilitate even greater focus on the cost performance of distributors.

Technology Change in the Sector

One form of technological change that may become significant in the future is the development of micro-grids.[15] They are a way to increase reliability by making sure that some customers can still get power, even if there is a problem

Smart Grid: advanced equipment and communication systems working together to improve the flexibility, security, reliability, efficiency and safety of the electricity grid.

[15] A micro-grid is a modern, small-scale version of the centralized electricity system that can continue to run as an independent network in case of an emergency on the larger grid.

somewhere else in the system.

Customers of every size will be able to use new technologies to contribute to micro-grid development. Rooftop solar panels, electric vehicle charging, and smart house demand response may all be part of the micro-grid. It will take some time for equipment to advance enough for distributors to be able to integrate customer micro-grids into their system operations. The OEB wants to remove barriers to future innovation. We also want to make sure that customers who cannot afford to invest in new technologies are not adversely impacted by the actions of those who do.

These technological developments are starting to happen in Ontario. We are already seeing an increase in solar panels and other distributed generation. These changes are part of a larger global trend. And regulators around the world have been responding to the trend. California is undergoing residential rate reform to support distribution system planning, including the connection of generation resources. Australia is also investigating alternative rate designs. Closer to home, New York is considering significant changes, including moving to flat rates and other major changes to the role of distributors, through its "Reforming the Energy Vision".

Europe's Agency for the Cooperation of Energy Regulators has recognized the impact these trends could have and the need for distributors to be engaged and innovative in their responses:

> New challenges, including higher levels of distribution-connected generation and the deployment of smart technologies, will require DSOs [distribution system operators] to be responsive and innovative to ensure efficient network development and operation. DSOs might use smart grid technologies and new innovative techniques to adapt to the changing environment at least cost to the consumer.[16]

The new rate design will enable distributors to recover the costs of distribution service fairly and consistently, thereby removing a barrier to innovation and technological change in the sector. Other means could be used to ensure distributors respond positively to the evolution of sector, however these would require the OEB to dictate how a distributor should act or would involve more complex charging and cost recovery mechanisms. These approaches would add unnecessary complexity, and potentially additional cost. The new rate design will achieve the objective in a more straightforward and proactive way. Innovation and technological change have the potential to bring significant benefits for customers. The OEB is committed to facilitating those developments for the benefit of all customers.

[16] Agency for the Cooperation of Energy Regulators, *Energy Regulation: A Bridge to 2025 Conclusions Paper*, September 19, 2014, s.4.3.

The Distributor's Role in Conservation

As described above, Ontario's distributors are responsible for delivering on the province's Conservation First strategy. They have ambitious conservation targets which they must meet.

When distributors implement conservation programs electricity usage goes down. Under the current rate design this leads to a reduction in distributor revenues, and these revenues decrease more than the distributor's costs do. As a result of these "lost" revenues, distributors have an inherent disincentive to promote conservation. Currently distributors are protected from "lost" revenues through a complex system of tracking and rate adjustments. The new rate design policy will eliminate the need for this mechanism for residential customers and will ensure that distributors have no disincentive to promoting conservation vigorously. Successful conservation programs will help customers to lower their electricity bills.

Investment Planning

Under the new rate design, residential distribution revenues will not vary depending on conservation, weather, or macroeconomic factors. The fixed charge will also provide greater assurance that investment costs will be recovered. The distributor will have greater certainty about the revenues it will collect leading to greater confidence around planning. This in turn will lead distributors to make investments when and as needed.

This change will complement the OEB's policies on investment cost recovery: the Incremental Capital Module, the Advanced Capital Module, and five-year distribution system plans to support rate applications.[17] Distributors will be better able to plan and make investments when they are needed, rather than have an incentive to advance them in time to coincide with the regulatory cycle (i.e. at the time of rebasing). While some "lumpiness" is unavoidable, distributors should plan for capital projects when they are needed, while also taking into account resource availability (time, people, financial). The result of improved timing for investments is an overall improvement in efficiency.

Stable and predictable revenues improve a distributor's cash flow and also improve credit worthiness. This can lead to lower borrowing costs, which would lower total costs and therefore reduce customer rates from what they would otherwise be.

[17] See Filing Requirements: Distribution System Plans and Filing Requirements for Transmissions and Distribution Applications / Filing Requirements for Electricity Distribution Rate Applications on the OEB's website.

Other Impacts on Distributors

The distribution rate design change will result in fixed and predictable revenue per customer. This will enhance the focus on unit cost performance and facilitate comparisons amongst distributors, which supports the OEB's focus on efficiency improvement.

This distribution rate design change will also benefit distributors (and customers) by reducing regulatory burden and regulatory costs somewhat. The fixed charge rate design will eliminate the need to forecast energy usage for rate-setting purposes, and therefore the need to review such forecasts in a rates hearing. The focus instead will be on distributor forecasts for system planning, which are driven by customer numbers and system peak demand.

A number of stakeholders raised the issue of the relationship between the rate design policy and the cost of capital. The return on equity compensates shareholders for the risks they bear. With a more predictable flow of revenue, one aspect of risk is reduced. While a number of stakeholders were of the view that the return on equity should be reduced, distributors were of the view that no change would be justified. This issue raises a number of important considerations and requires more extensive analysis, all of which is beyond the scope of this consultation.

Other Options

The OEB's draft policy report identified three approaches to residential distribution rate design: the one we are adopting and two others which we have rejected.

In considering the options for this distribution rate design change, the OEB has recognized the challenges around customer understanding. It is one of the principles of rate design that simplicity is preferred over complexity.

One of the options we looked at would base the distribution charge on the size of a customer's electrical connection. This would result in the creation of additional rate classes for residential customers. However, distributors do not have this information currently, and it would be costly to gather this information. There was little support for this option amongst the stakeholders.

Another option that we looked at, and which received much broader stakeholder support, would base the distribution charge on electricity demand. In other words the charge would not be based on the total volume of usage over time, but instead on the maximum usage at any one time. This way of charging is used for larger commercial and industrial customers. Although some stakeholders claimed that residential customers would be able to understand demand charging, we are not convinced at this time. Focus groups and surveys undertaken by the OEB suggest that customers have little understanding of how electricity is measured. Customers do not yet have a good understanding of what is meant by a kilowatt hour. Concepts such as demand as measured in kilowatts are even more abstract for most customers. Customers would need more helpful technology to adapt and manage under a more complicated rate like a demand charge. This approach would also result in additional complexity for distributors and customers with potential changes from year to year as a customer's demand changes.

Some stakeholders supported the use of more complex rate structures. Suggestions included the following:

- more customer classes, based on size of residence
- a surcharge based on peak demand
- block rates based on use, which increase with higher use
- rates based on a comparison of individual use to average use
- rates based on rolling averages of individual use

There is an important trade-off between complexity and ease of understanding. A more complex rate design might be technically more accurate or in theory provide good price signals. However, if the customers do not understand the structure, then they will be

less likely to accept it as fair and it will be less likely to influence behaviour in the desired way. There are also limitations on the ability of distributors to alter their billing to handle more detailed rates or more tailored customer classes without incurring significant costs.

Our conclusion is that we should focus customer attention where changes can have the biggest impact on bills and system costs. The new rate design will create a simple distribution charge which recovers costs fairly, is easier to understand, stabilizes about 20% of the bill, and facilitates rate comparisons among distributors. The customer can therefore focus attention (in terms of influencing behaviour) on the commodity portion of the bill. Our conclusion is also that we should focus distributor attention on enabling new technologies, promoting conservation, and focusing on cost drivers. The new residential distribution rate design does that by stabilizing distributor revenues in a straightforward and proactive way.

Implementation

The OEB is committed to achieving the objectives of the new residential distribution rate design policy. An important aspect of that is the successful implementation of this change across distributors and across the province. We considered the following three questions:

- Should all distributors implement the change in the same way?
- What is the best transition process to balance timely introduction of the change with helping customers to manage bill impacts.
- How should various detailed questions about implementation be resolved?

The rest of this chapter addresses those matters.

Consistency across Distributors

The OEB will require all distributors to implement the new distribution rate design. Having a uniform approach was one of the stated objectives for this initiative. Customer representatives generally favoured a uniform approach because it would make it easier for customers to understand. A number of distributors also took this position, although others preferred greater flexibility to address their specific situations. The OEB has adopted a uniform approach when making other rate design changes, and will do so in this case as well.[18]

Transition Process

The OEB has determined that the change will be phased in, with a four-year transition period. During the transition period, the fixed charge will be increased gradually and the usage charge will be reduced slowly. At the end, there will be a fixed charge which recovers the distributor's costs, and there will no longer be any usage charge. We are phasing the change to reduce the impact on those customers whose bills will increase. The rate changes will begin in 2016 and will be completed in 2019.

Moving from the current rate design to a fixed distribution charge for residential electricity customers will result in only moderate bill changes for most customers. However, there will be significant bill decreases for some customers and significant bill increases for some customers. This was discussed in some detail earlier in this report.

[18] For example, the OEB has a policy of uniform ranges for the revenue to cost ratios.

While those customers who are entitled to a bill decrease would like to see the change implemented quickly (particularly low income customers) the OEB must ease the impact on customers who will experience bill increases. It is common to make rate design changes over an extended period, rather than all at once. This follows the rate design principle of gradualism. The OEB has adopted this approach in the past, and other jurisdictions have done so specifically when moving to a fully fixed distribution charge.[19]

The OEB undertook further analysis to determine the best approach for a transition process. We need to balance considerations of customer impact with achieving the objectives of the policy and maintaining a similar timeline for all distributors. We based our analysis on residential consumption data from 2012 for eleven distributors. The distributors differ in location and size and in the ratio of fixed to variable charges in their current rates, and are therefore representative of the entire sector. We looked at three options:

1. Increasing the fixed monthly service charge by equal increments: The amount of the increase would vary from distributor to distributor, depending upon the current level of their fixed charge and usage charge. If this method were extended over four years, the largest bill increase would be less than $5 per month for most distributors.
2. Increasing the fixed monthly service charge for all distributors by the same increment: If the monthly service charge for the distributors was increased by $4 in each year, most distributors would reach their fully-fixed charge in less than four years. Some would reach their fully fixed charge in two years.
3. Increasing the fixed monthly service charge by a set percentage each year for all distributors: If the monthly service charge were increased by 20% each year, most distributors would reach the fully-fixed charge in less than five years. A 20% increase in the fixed monthly charge would be equivalent to an increase in the total bill of about 4% to 6%.

The OEB has determined that the best approach is the first option: a four-year transition for all distributors. Each distributor will determine its fully fixed charge and will make equal increases in the fixed charge over four years to get to the fully fixed charge. At the same time, the usage charge will be reduced in order to keep the distributor revenue-neutral.

[19] In Georgia, the law requiring fixed charges for natural gas explicitly required a commitment to gradually transition rates to avoid rate shock. The Ohio Public Utilities Commission required Duke Energy to use a two-year phase-in period. Illinois anticipates a four-year phase-in to increase the fixed charge to 80% of the total bill for ComEd Illinois.

We have selected this approach because it best balances the objectives of a timely and uniform implementation period while mitigating the impact on customers who will experience a bill increase. Under this approach, low volume residential customers across the province will see a bill increase each year. Representatives of low income customers have explained to the OEB that an increase of more than $5 per month would be very difficult for low income customers. As indicated earlier in this report, for many low volume customers the bill increases will be small. However, some low volume customers will see larger increases. The approach we are adopting will in most cases keep even the largest increases to less than $4 per month in any given year. This approach also insures that those customer entitled to bill decreases (including low income customers using electricity for heating) will see those decreases without too much delay.

While the OEB wants consistency in implementation, we will consider applications for exceptions to the four-year transition in two situations:

1. If the monthly fixed charge will need to rise by more than $4 in each year of the transition.[20]
2. If there are other rate changes being made as a result of other OEB decisions, which together with the policy change could result in unusually large bill impacts. Examples could include the clearance of deferral and variances accounts, increases resulting from a Custom IR or a re-basing application, or increases resulting from other rate design changes.[21]

There is one other situation which may warrant an exception. Distributors filing for Custom IR or for rebasing as of January 1, 2016 must file their rate applications by April 24, 2015. However, the implementation details and filing guidelines may not be ready in time for that filing deadline. The OEB will consider an exception request in that situation. Having rebased in 2016, these distributors will likely be able to proceed with the transition in 2017 with fewer complications.

Working Group

The OEB understands that there are technical and administrative matters that need to be addressed in order for the new rate design to be implemented. The OEB believes

[20] An example would be Hydro One's Rate R2, which under the four year methodology would see an increase of approximately $13 per year in the monthly service charge, based on 2012 fixed/variable ratios, although there would also be offsetting decreases in the usage charge.

[21] Other rate design changes may result from a distributor seeking to recover additional revenue from its residential class because of the loss of a large commercial or industrial. In those situations, low volume customers would be impacted by the transition to a fully fixed rate and by the increase allocated to residential class overall.

that solutions to these issues should be examined in more detail through a working group of stakeholders. As explained in the report this policy change is revenue neutral for the distributors. It is important to ensure that distributors do not earn additional revenue as a result of this transition. The working group will be tasked with developing recommendations for how revenue neutrality can be ensured during the transition.

The OEB expects that implementing this change during IRM proceedings will raise some issues since normally IRM proceedings are largely administrative. This rate design change will require more significant rate calculation work and more significant tariff sheet changes. The working group will provide recommendations to ensure the filing requirements and rate models reflect the new rate design policy.

In addition, the changes arising from this policy may have implications for distributors applying for certain provisions under the Price Cap Incentive Regulation and Annual Incentive Regulation Index rate setting methods. The working group will also examine these issues. In particular:

- Should rate riders for the Incremental Capital Module or for other variable costs be changed to follow the new rate design?
- How will the calculation of amounts in the LRAM and LRAM Variance Account be affected by the rate design change?

Once the OEB has considered the recommendations of the working group it will make appropriate amendments to filing requirements and rate models. We also expect to offer orientation and support for applicants prior to and during application processes.

The OEB will also consult with the working group and other stakeholders on the following issues:

- Whether distributors that have installed in-suite metering should have a multi-unit residential rate (if they do not already).

- Effective customer education is an important part of this policy change. OEB staff will work with the working group and other stakeholders to provide recommendations on how the OEB's activities can be coordinated with those of distributors and others.

The working group's responsibilities are focused on the successful implementation of the policy change.